

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day:month:year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2005/000327

International filing date (day:month:year)
31.01.2005

Priority date (day:month:year)
31.01.2004

International Patent Classification (IPC) or both national classification and IPC
H04L29/06

Applicant
ELONICS LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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AP20 Rec'd PCT/PTO 27 JUL 2006

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2005/000327

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43bis.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2005/000327

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)
and / or
2. Non-written disclosures (Rules 43bis.1 and 70.9)
see form 210

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No. .

PCT/GB2005/000327

Re Item V.

- 1 Reference is made to the following document:

D1 : RITTER M B ET AL: "Word Striping on Multiple Serial Lanes" IEEE 802.3
HSSG MEETING, [Online] 9 November 1999 (1999-11-09), pages 1-18,
XP002329053 KAUAI, HI, US Retrieved from the Internet:
URL: http://grouper.ieee.org/groups/802/3/1OG_study/public/nov99/ritter_1_1199.pdf; [retrieved on 1996-05-21]

2 INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not inventive in the sense of Article 33(3) PCT.
Document D1 discloses (the references in parentheses applying to this document):
A method of communicating information within a physical link layer of a packet based communication system, comprising the steps:
a) Employing a physical link layer transmitter to use an additional input data field within an idle data field of a data stream transmitted within the packet based communication system (see page 12, Idle Word); and
b) Employing a physical link layer receiver to extract the additional input data field without corrupting information contained within the data stream (the receiver must in any case extract the information contained in the different Dx.y of an Idle word).

The subject-matter of claim 1 therefore differs from this known method in that:
The additional input data field substitutes existing bits in the idle data fields.

The problem to be solved by the present invention may therefore be regarded as the need of hardwiring non-standard signalling codes in the physical link layer transmitter/receiver.

The feature of having standard fields replaced by additional input data fields at the transmitter and restored at the receiver by an external entity (multiplexer/demultiplexer) is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the

exercise of inventive skill, in order to solve the problem posed.

3 INDEPENDENT CLAIM 10

3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 10 is not inventive in the sense of Article 33(3) PCT.

Claim 10 refers to the corresponding means for carrying out the method of claim 1.

The subject-matter of claim 10 is therefore, and for the reasons above, not inventive.

4 DEPENDENT CLAIMS 2-9

Dependent claims 2-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(2) and (3) PCT).

International PCT Application No PCT/GB2005/000327
In the name Elonics Limited
Methods and Apparatus for Multiplexing Data

We write in response to the PCT Examiner's objections raised within the Written Opinion of the International Searching Authority pursuant to Rule 70 PCT, dated 6 June 2005.

Cited Prior Art

Reference was made by the PCT Examiner at this time to the following documents:

- D1: IEEE 802.3 HSSG Meeting XP002329053 (Ritter et al);
- D2: IEEE 802.3Z Gigabit Ethernet Task Force Interm Meeting XP002329054;
- D3: US 6,617,984 (Kryzak et al.); and
- D4: US 2005/0063413 (Caldwell et al).

Inventive Step

As discussed with reference to Figure 1 of the Application the international standard employed by those skilled in the art to provide a logical structure for network operations protocol is based on an Open Systems Interconnection (OSI) model (1). In this model the Physical Link Layer (2) is defined as the lowest layer above which is located the Datalink Layer (3). Normal practice is for the Datalink Layer (3) to perform the task of encoding and decoding a data stream into discrete data packets (10) separated by idle data fields (14), as shown schematically in Figure 3. Within such systems the Physical Link Layer (2) is simply employed as the transmission medium, there being no facility for post packet encoding so as to insert and subsequently extract information at the Physical Link Layer (2) itself. Reference to the Datalink Layer (3) is required to achieve any subsequent insertion or extraction of information.

It was recognised by that Applicant that there exist occasions when it is highly beneficial to be able to communicate directly between points within the Physical Link Layer (2) without having to refer to the Datalink Layer (3). The method developed to achieve this result is the introduction of a physical link layer transmitter to substitute an "additional input data field within an idle field" located between the normally transmitted data packets (10). A corresponding physical link layer receiver is then required so as to extract this additional input data field without any detrimental effects to the information carried by normally transmitted data packets (10) i.e. the additional input data field is extracted by the physical link layer receiver and simultaneously replaced with idle field characters. This method forms the basis of independent method claim 1 and, as recognised by the Examiner, the corresponding means for carrying out this method is defined by apparatus claim 10.

D1 is considered to be the closest document of prior art to the invention as defined by independent method claim 1 and apparatus claim 10. This document teaches of "Word Striping on Multiple Serial Lanes" whereby idle fields are selectively removed at the physical link layer receiver following transmission of data packets across the physical link layer. The criteria for selection of which idle fields are to be removed depends on a direct comparison being carried out between parallel data channels or

serial lanes.

The example referred by the Examiner on Page 12 of D1 describes a four serial lane embodiment within the IEEE 802.3ae 10G Ethernet Standard. Employing the described method allows for coarse data alignment across the four serial lanes through the selective removal of idle data fields. This coarse alignment process is said to aid data recovery and the synchronisation process at the receiver.

From the above discussion it can be seen that D1 relates to a different technical problem to that solved by the method and apparatus of the present invention, as defined by Claims 1 and 10, respectively. The present invention provides a method and apparatus to enable communication to take place directly between points within the Physical Link Layer (2) while D1 describes a method of how to improve data recovery within an OSI communication system.

As D1 is not concerned with the same technical problem addressed by the present Application the skilled man would not be motivated to apply the teachings of D1 to solve the technical problem outlined above.

Even if the skilled man were so motivated to look to the teachings of D1 they would merely be taught how to extract idle data fields at the receiver of a physical link layer, a step which is not incorporated within the present invention. The physical link layer receiver of the present invention actually extracts an additional input data field and **replaces** this with idle data fields. Thus the D1 in fact teaches away from employing a physical link layer receiver for the function required by the present Application

It is our opinion that this invention as defined by independent method Claim 1 and apparatus Claim 10 exhibit the required inventive step under Article 56 EPC over the cited prior art.

By their dependencies Claims 2 to 9 must also be regarded as exhibiting the required inventive step.

Conclusion

We trust that the above arguments highlight the novelty and inventive step of invention of the Applicant's invention, as defined by the claim set presently on file, over the teachings of the prior art. Therefore, we respectfully request favourable reconsideration of this matter.

22 December 2005

Kennedys Patent Agency Limited
Agents for the Applicant